

## **The 1<sup>st</sup> World Congress on Gender-Specific Medicine Men, Women and Medicine A New View of the Biology of Sex/Gender Differences and Aging**

The 1<sup>st</sup> World Congress on Gender-Specific Medicine, Gender-Based Differences and Aging took place in Berlin, February 23-26, 2006. There were presentations on Gender-specific aspects of cardiovascular diseases; Gender and the treatment of diseases; The gender-specific experience of pain; Immunology – the role of gender; The impact of biological sex/gender on metabolism; Gender and dermatology; Gender and sexual function; Gender medicine around the world; Gender and aging; The gender-specific brain; The role of testosterone in the metabolic syndrome in men; Gender-specific aspects of drug metabolism and addiction; The lung: development, malignancy and gender; Building a gender-specific medical center: pointers and pitfalls; and the impact of sex on illness. It was an honor for me to be invited and to present our experience and differences between men and female contact allergy.

Here are some of the newest concepts: women live longer than men. Male and female hearts respond differently to pressure load and may also differ in their metabolic response. In Europe, cardiovascular diseases kills a higher percentage of women (55%) compared to men (45%). Women in general have more adverse side effects and drug interactions. Women in cardiology are under-diagnosed, under-represented and under-researched. Diabetes mellitus in women produces a 4 to 6-fold increase in the risk of coronary artery disease, while men experience only a doubling of risk. In cardiac surgery outcome, women had a 1.5-fold ( $p < 0.001$ ) age-dependent early all-cause mortality rate recorded in men, identifying the gender-specific risk factors. The focus of research on women's health has evolved during the past 15 years. Clinical studies include women, now requiring that the research defines differences between men and women and that sex/gender differences be addressed in the design of biomedical research, including basic biological studies. Detection of gender genomic ID-clock information has

been a longstanding unfulfilled dream in medicine. Biotechnology approach can translate functional genomics into gender time-mapped pharmacogenomic personalized medicine, new therapeutic targets and drug discovery. Gender maps of time-keeping patterns may serve for timing, screening, diagnosis and an improved quality of life in men and women along their lifespan. The overall prevalence of migraine in the western world is approximately 10%, affecting only 6% of men and 18% of women. What is the role of feminine hormones and how to treat migraine? Epidemiological evidence suggests gender differences in the prevalence and blood pressure levels in different age groups. Obesity is an important contributor to hypertension in females, and psychosocial aspects may affect blood pressure levels differently in men and women. In many types of kidney diseases, progression is faster in men than in women. There is growing evidence for anatomical and neuropsychological differences in the nociceptive system of males and females: sex differences in perceptual sensitivity have been documented. Sexual dimorphism in nociceptive processing and pain responses involves the interactions of multiple biological, psychological, and sociocultural factors. Most autoimmune diseases are detected in females of childbearing age. The role of estrogens will be delineated. Prolactin also plays a role in autoimmunity. Hormonal factors regulate immunity and affect susceptibility to autoimmune/inflammatory disease. Regulation of immunity by and interactions between the hypothalamic-pituitary-adrenal (HPA) and hypothalamic-pituitary-gonadal (HPG) axes contribute to the two- to tenfold incidence and severity of autoimmune/inflammatory diseases in females compared to males. Some of asthmatic women also have worsening symptoms before or during menstruation. PPAR $\gamma$  is a member of the nuclear hormone receptor superfamily that regulates lipid metabolism and glucose homeostasis. The incidence of side effects of PPAR $\gamma$  in the treatment of

diabetes is much higher in females than in males; PPAR $\gamma$  expression was higher in females and estrogen enhanced PPAR $\gamma$ . Estrogen receptors are thought to play a crucial role in development, reproduction, and normal physiology. They activate the immune system in a more complex manner: T helper 1 responses are ameliorated while T helper 2 responses are induced or accelerated. Data were presented on gender specific dermatoses, the basic immune endocrine interplay that guides the immunomodulatory effects of sex hormones, and the molecular mechanism of action of these hormones through cellular receptors. Sex steroids have different effects on the development and function of the immune system in men and women, resulting in dimorphism: women show a greater immune response to exogenic insults and stronger autoimmune reactions than men. An increase in oxidative stress has been described during intensive physical exercise. Gender differences have been recorded in oxidative stress, especially at older age. Parenteral expression is among most consistent and well-replicated risk factors for childhood anxiety disorders, disruptive disorders and depression. The results support active treatment of depressed mothers, as the impact is not only on themselves but also on their children. The result needs to be examined in depressed fathers. Gender-biased practice in cardiology was one of the first areas focused on by researchers in gender-specific medicine. Coronary artery disease (CAD) is the leading cause of death in postmenopausal women. At age <55, the incidence of CAD is one-third that in men, however, by age 75 this gender gap disappears. Female gender is an independent risk factor for early mortality after bypass surgery in patients aged <70.5.

Screening studies of sleep apnea in the general population (Canada) found the prevalence to be actually less disproportionate (M:F=2:1). An increased prevalence of sleep apnea was recorded in men. Dementia is an increasing common disease. As women in many countries outlive men, their risk of dementia also rises, as age is the greatest risk factor for dementia (Canada). The main risk factors for dementia are age, family history, apo E status, and the traditional vascular risk factors such as hypertension, diabetes, hypercholesterolemia, and atrial fibrillation. The metabolic syndrome triade is a significant predictor of type 2 diabetes as well as of atherosclerotic vascular disease. Visceral obesity, insulin resistance, and low-grade inflammation are the major components that act through a vicious cycle of sex-based dif-

ferences in the pharmacokinetics and pharmacodynamics, well known for years now. Women suffer more frequently from adverse drug reactions than men, e.g., metoprolol induced bradycardia, morphine-associated nausea, and meploquine-induced psychosis. Especially QT-prolongation occurs more frequently in women than in men.

Women smokers are much more likely to have bronchial hyperreactivity than men, and it correlates with a faster decline of lung function in women but not in men. Many more women than men suffer from migraine and temporomandibular pain. Studies (USA) suggest that estrogen receptors in trigeminal neurons modulate nociceptive responses through serotonin and neuropeptides. Variation in estrogen receptor signaling and neuropeptide plasticity in trigeminal neurons across the female cycle may be the major contributor to the increase of painful episodes in specific phases of the menstrual cycle. Musculoskeletal pain (MP) comprises a major public health problem in western countries, mainly due to its high impact on (work) disability. Pain was more prevalent among women than among men. Overweight (all pain locations) and older age (lower extremities) was more strongly associated with chronic MP in women while pain catastrophizing (upper extremities) was more strongly associated with chronic MP in men.

The development of gender-specific medicine as a field is a triumph for evidence based medicine and equity advocacy, and is a credit to founders (Australia). Women experience more nausea and vomiting than men in a variety of clinical and non-clinical conditions. Sexual dysfunction is commonly understood as a psychosomatic disorder with psychodynamic as well as organic background. Essential hypertension is a widespread and common disorder. Hypertension and sexual dysfunction are a high risk for men but not for women. Gender is more than biological differences between women and men. A gender perspective in medicine implies that living conditions, positions in the society, and societal expectations about "femininity" and "masculinity" are to be considered along with biology in professional relations as well as when theorizing about women and men. On an average, men experience ischemic heart disease approximately ten years before women. Identification of y chromosome CVD risk genes may lead to elucidation of the CVD risk for men. Chronic pain changed hormonal plasma levels differently in male and female patients. The macrophage migration inhibitory factor (MIF) showed positive cor-

relation with testosterone and negative correlation with estradiol. In younger men and women there is a strong pain-induced decrease in MIF availability. Cytosine-adenine repeat polymorphism of the estrogen receptor beta (Erb) gene may be associated with menopausal symptoms. Twenty percentage of mortality in western population is due to cancer; 40% are involved at some point during life. Most cancer forms show conspicuous difference in the frequencies between women and men. Lung cancer is the most common cancer worldwide, and the most common cause of cancer-related deaths in western countries. Since 1950, lung cancer

rates have increased by 50% in women. In 2005, approximately 25% of female deaths could be attributed to lung cancer.

Gender-specific medicine has major responsibility to meet social needs and to contribute to the social value of health research. This meeting was successful for both attendees and presenters.

Professor Jasna Lipozenčić, MD, PhD

## **Disease Control Priorities Project (DCPP) and 2<sup>nd</sup> Global Meeting of the Inter-Academy Medical Panel (IAMP) April 2-6, 2006 Beijing, China**

On behalf of the Disease Control Priorities Project (DCPP), the Inter-Academy Medical Panel (IAMP), the Chinese Academy of Engineering (CAE) and the Chinese Academy of Sciences (CAS), Launch was held in conjunction with the 2<sup>nd</sup> Global Meeting of the IAMP, April 2-6, 2006, Beijing, China.

Over 300 policymakers, international health experts, journalist, and scientists were invited to this landmark event. The program informed global audience on the importance of setting well-defined health priorities and implementing cost-effective, evidence-based interventions. In addition to stimulating dialogue among attendees including a large number of Chinese scientists, the event was highly publicized and covered by international media to reach global audience. DCPP is a partnership among the Fogarty International Center of the U.S. National Institutes of Health, the World Bank, the World Health Organization, and the Population Reference Bureau, with funding from the Bill & Melinda Gates Foundation.

The DCPP portion of the program highlighted policy implications of three flagship publications: Disease Control Priorities in Developing Countries, Second Edition (DCP2), featuring a cost-effectiveness analysis of health interventions, health-systems, and prevention and treatment programs for

a comprehensive range of diseases and conditions; Global Burden of Disease and Risk Factors, a compendium of world-wide deaths by cause, burden of disease, and risk factor data; Priorities in Health, a distillation of DCP2 written for policy-makers; it is available in seven languages.

The books provide flexible, practical and simple tools to assist countries to reach the Millennium Development Goals for Health (MDGs), among other health and development outcomes.

The 2<sup>nd</sup> Global Meeting of the IAMP featured in-depth presentations and discussions of the DCPP scientific content and related topics such as avian influenza and road traffic safety. Members of the IAMP (Academy of Medical Sciences of Croatia is member since 2001), an international coalition of academies of medicine, engineering and sciences, serve as Advisory Committee to the Editors of DCPP. The Academy of Medical Sciences of Croatia was represented by Professor J. Lipozenčić at General Assembly on April 6, 2006. It was very useful to attend this Meeting, the main messages of which will be presented to 192 health ministers at the World Health Assembly in May in Geneva.

Professor Jasna Lipozenčić, MD, PhD